A MEMORY TRAINING PROGRAM
FOR OLDER ADULTS

By

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This study examines the effectiveness of two individual memory training programs for older adults. One of the training programs used a counseling intervention that addressed the individual needs of the trainee using self-efficacy and cognitive behavioral techniques (comprehensive group). The other training program was a bibliotherapy approach augmented by carefully restricted trainer contact (self-help group). Consistent with successful intervention programs used in previous research, the training was long-term and focued on one strategy. The training of organization strategies was conducted in six one-hour sessions, with similar information being provided in each group. The experimental dependent variables were memory performance, memory self-efficacy, sense of well being, and depression. The impact of training on these variables was evaluated by comparing the training groups with a wait-list control group using a pretest-posttest design, with an additional one month follow-up assessment to determine the maintenance of the newly learned skills.

The results show that self-efficacy strength improved for the comprehensive training group at posttest as compared to pretest. For prose recall the differences

among groups approached significance at posttest, and prose recall scores at follow-up were significantly different from pretest scores for both training groups. Hypotheses pertaining to improved list recall, decrease in negative affect, and increases in life satisfaction related to the memory training were not supported. The lack of training effects on list recall may be attributed to methodological variables. With regard to depression and life satisfaction, this study was unable to extend the impact of memory training to depression and life satisfaction. These results suggest that an individually structured training program can have a positive impact on older adult's perceptions of their memory performance, while also improving prose memory performance.

REVIEW OF LITERATURE

In a review of the existing memory training literature, Poon, Fozard, and Treat (1978) noted that none of the skill training programs up to that point helped people to identify their memory complaints, nor address their problems on an individual basis. More recent research efforts (Berry, West, and Dennehy, 1989) have resulted in the implementation of increasingly sophisticated instruments to assess older adults beliefs about their memory skills, but training interventions that address the individual's needs have not been developed. Therefore, a potential avenue for new investigations is to acknowledge and incorporate the individual's strengths and weaknesses into the memory training program.

Memory functioning in older adults is complex, being related to other aspects of cognitive functioning, states of mind, affective state, and age (Poon, 1985). Not surprisingly, these same factors also affect the acquisition of memory strategies (Treat, Poon, Fozard, & Popkin, 1978). While these aspects of the person are recognized as important for successful learning, they are not always considered in memory training programs.

Treat et al. (1978) and Poon, Walsh-Sweeney, and Fozard (1980) also point out the need to see elder adults as individuals, who should be approached as having particular needs. Taken as a whole, the population of older adults does not have one memory problem, but instead there are several memory problems that are manifested differently in different people. Hence, responses to these memory problems also need to consider the individual.

Studies on the effectiveness of memory training have had mixed results, although typically, some improvement in memory performance is demonstrated. Several studies have found that individuals apply the learned strategies in a limited way or that the strategies are not used for everyday tasks to which the strategies could be applied. A number of factors seem to be important to understand the impact of memory training: amount of training time, whether there was any consideration for maintenance, the specific strategy selected, the general approach to individual training, and whether affective and self-concept issues (self-efficacy) were addressed. These issues will now be addressed.

<u>Time in Training</u>

The amount of time spent on training older adults is an important factor to consider in evaluating memory interventions. Some studies showing positive training effects have had as little as two hours of training or a single training session (Schmitt, Murphy, & Sanders, 1981; Yesavage & Jacob, 1984; Anschutz, Camp, Markley, & Kramer, 1985). For example, Anschutz, Camp, Markley, and Kramer (1985) used the method-of-loci to improve memory for lists. The method-of-loci instructs people to link a series of known locations with to-be-remembered material through the use of vivid imagery. After two one-hour training sessions, improvements in performance were found on a real world memory test conducted in a grocery store (Anschutz et al., 1985). These lists, however, were very memorable, having been generated by the subjects themselves.

These brief interventions tended to focus on a single strategy and a single task and demonstrated that short-term interventions can bring about immediate improvement in memory performance. Additionally, the results suggest that more expansive interventions could be even more effective. The relatively

limited short-term interventions used in these studies do not create an environment that encourages lasting change in functioning.

Longer, more ambitious training programs have also been used successfully with older adults (Schaffer & Poon, 1982; Yesavage & Rose, 1984a; Yesavage & Rose, 1984b; Rose & Yesavage, 1983; Yesavage, 1984; Sheikh, Hill, & Yesavage, 1986). Rose and Yesavage (1983) found that a list-learning mnemonic improved list recall after three 2.5 hour sessions of training with three different age groups (21 to 67 years). While the older adults recall improved, the eldest group (60 years and older) showed the least improvement of the three age groups. Yesavage and Rose (1984b) trained older adults to improve list recall using the method-of-loci or the method-of-loci coupled with judgments about the personal pleasantness of the association. The latter, more extensive condition resulted in the most improvement.

Zarit, Cole, and Guider (1981) found improvement after training two groups for six sessions of 90 minutes each. Similarly, Zarit, Gallagher, and Kramer (1981) taught memory strategy training and growth group training to two separate groups in seven 90 minute sessions. They found improved performance on memory tasks with both types of training. Zarit et al. proposed that the improvement in the growth group could be attributed to several factors. Although greater familiarity with the memory tasks may have accounted for improved performance in the growth training group, self-generated memory strategies, decreased negative affect, and increased motivation might also have influenced performance.

Time in training appears to be related to likelihood of improvement in memory performance. As the Yesavage research program shows, the longer training interventions tend to have greater success. This is in contrast to the shorter interventions that sometimes lead to weakly learned strategies that are

abandoned soon after training has ended. The research cited above suggests a training program needs sufficient time to acquaint, teach, and develop a memory strategy.

Maintenance

While it is interesting to know that older adults can enhance their memories, it is important that they be able to maintain those improvements over time. Maintenance is the continued application of the strategies acquired in training. While it is good to have short-term gains, the hope is to affect the trainee's life in a positive lasting fashion. There is a developing body of research investigating this issue (Sheikh, Hill, & Yesavage, 1986; Anschutz, Camp, Markley, & Kramer, 1987; Stigsdotter & Backman, 1989; Flynn & Storandt, 1990).

Long term maintenance was assessed in a study conducted by Anschutz, Camp, Markley, and Kramer (1987) who performed a three-year follow-up to see if their subjects, taught the method-of-loci in a two-hour session, were continuing to use this memory strategy. While the subjects reported that they thought the training had been useful, few of them used the method-of-loci during the follow-up testing.

In contrast, one-month follow-up assessments after longer term interventions have shown that improvements in memory performance were generally maintained (Scogin, Storandt, & Lott, 1985; Flynn & Storandt, 1990). In both of these investigations, a 16 session self-help manual was used to teach memory skills. The trainees were given the training manual and asked to study the material individually at home. The trainees had six weeks to complete the program, with the experimenters calling to check on them and to answer training-related questions.

It is also useful to think of maintenance as a measure of the real effectiveness of training. If the trainee does not continue to use the skills, then there can be no long-term improvement in their lives. Few investigators have examined long-range training effects. One study has shown long term maintenance. Stigsdotter and Backman (1989) determined that compared to a general cognitive skills training program or no training, a multifactorial training approach was the more effective method in a six month follow-up assessment.

Based on this research, it appears that for lasting improvements in memory performance to develop, a considerable amount of time in training is required for the strategic skills to be learned. Additionally, the acquisition of strategies requires learning how and when to implement them. Practice leads to increased levels of familiarity and expertise with the task, as well as the use of effective strategies which allow the individual to perform the task well. Retention of any learned skill is generally thought to be a product of practice over time and a focused effort to master the skill (West & Tomer, 1989). In other words, the greatest likelihood of maintenance of newly learned memory strategies is brought about by a commitment to invest time and energy by the trainee both during and after training.

Strategy Selection

There are several memory strategies that have been used with varying levels of effectiveness. Imagery, association, mnemonics, and organization strategies have been taught to older adults and each has been shown to be useful. To be useful in everyday living, the strategy should be applicable to many tasks, result in the improvement of memory functioning and be effective and available to all of the individuals in training. In other words, the strategy should either

already be in the trainees' repertoire or be fairly easy to acquire. The approaches used in previous training research will now be reviewed.

Researchers have used a variety of imagery strategies to improve memory performance in older adults, including the method-of-loci (Yesavage & Rose, 1983), the image-name match method (Yesavage & Jacob, 1984; Hill, Sheikh, & Yesavage, 1989), as well as other forms of visual imagery. Video taped imagery training has also been effective in improving memory in older adults (West & Crook, in press). These investigations utilizing visual images did teach older adults how to use imagery to improve recall. Although West and Crook found one-week maintenance of their imagery training, there is little evidence for maintenance of imagery skills after training (West & Tomer, 1989). Furthermore, Flynn and Storandt (1990) speculated that imagery techniques were of little use to the subjects in their study, and may have hindered recall. Thus, while visual imagery training has been shown to enhance memory performance, because of the potential problems with imagery for older adults (West & Tomer, 1989), other techniques ought to be explored more fully than they have been in previous research.

Organization strategies are based on the ability to group information with similar meanings (Hultsch, 1971). Researchers have explored the relationship between organization and memory performance in older adults (Hultsch, 1974; Worden & Meggison, 1984). Groups trained to organize by categorizing lists had better recall than control groups or groups trained just to rehearse (Schmitt, Murphy, & Sanders, 1981). This training, which took place during one session, was specific to the task. It should also be noted that the authors found little use of strategies in the control group, that is the control subjects did not spontaneously use organization. In another study of strategy use in different age

groups, Rankin, Karol and Tuten (1984) found that categorization was the only strategy consistently associated with improvements in recall.

Both imagery and organization training in these studies rely on the assumption that everyone uses or can use these techniques to improve memory. The same assumption is made in this study. Therefore, the current study focus is on organization. This strategy was selected because older adults, in general, should be familiar with this concept and have the abilities to use the strategies. Although there appear to be changes in the use of organization over the life span (Hultsch, 1971), older adults retain the ability to use association networks and can utilize these in learning new materials (Rankin, Karol, & Tuten, 1984). This population also knows basic categories, such as food groups, that can be used to make list information more manageable. Thus selection of this strategy is based upon the belief that the training was using a technique that builds on a strength of older adults.

General Approach to Individual Training

Most researchers have employed group training. However, individual difference factors may be relevant in selecting a training program. Group training may not be able to address all these individual needs and differences. For example, memory ability at time of training is a factor for how much improvement can be attained. Due to retirement, other lifestyle changes, and reduced need for skill acquisition, older adults sometimes stop using the learning strategies they may have used during formal education or on the job. Because of this, training older adults in general learning skills such as attention and organization has also been used in memory training (Schaffer & Poon, 1982). Although Schaffer and Poon found significant differences, pretest to posttest, individual variability was so great as to reduce the import of these increases.

Another of the potential areas of individual difference is motivation. If there is no motivation for change, then the quality of the training will not be a factor (West & Tomer, 1989). Individual differences clearly affect training and their role may be fruitfully addressed with a more individual approach.

Self-help approaches have also been demonstrated to be useful in memory training program for older adults (Scogin, Storandt, & Lott, 1985; Flynn & Storandt, 1990). Bibliotherapy is the use of written materials to change memory performance. Scogin, Storandt, and Lott (1985) provided a written manual with self-guided training for older adults complaining of poor memory. The manual contained training materials on the use of imagery and the method-of-loci, as well as general descriptions of memory processes. Training was found to improve the memory performance in both the immediate treatment and the wait list group. Using bibliotherapy alone was found to be inferior to a training manual supplemented by group discussion in a later study by Flynn and Storandt (1990). Studying the training manual alone did not improve memory, yet being in a group that discussed problems of aging and memory techniques was associated with improved performance, even at a one month follow-up. Flynn and Storandt (1990) were not sure why or how the group discussion was more effective than bibliotherapy. One possible explanation is that it provided an opportunity to address individual concerns and questions.

Whereas individual needs may have been addressed in these self-help programs, this line of research was not designed specifically to investigate the processes by which the individual needs of the subjects were met. Flynn and Storandt (1990) note that future work might be able to identify the specific effects of group interaction and the influence that affective and interpersonal discussions have on training.

There are a number of possible explanations for the benefits of the self-help approach. Self-help approaches may work because they allow for self-pacing and provide more time. Alternatively, they may work because of improvements in beliefs and attitudes about ones' self . Older adults generally re-evaluate themselves in the context of the physical changes they undergo, none of which are for the better. Coupled with our society's disregard for older persons, their own beliefs and attitudes about themselves are often negative. Experiences where older people can exert control and create a positive outcome can help to counteract these negative influences. For instance, researchers have shown improvements in memory self-evaluation after training (Zarit, Cole, & Guider, 1981). One way to view this changing evaluation after training is to see it as a reflection of improved memory self-efficacy.

Self-Efficacy

Self-efficacy is one's belief and judgment about personal abilities in an area of performance that involves some uncertainty or ambiguity. In addition, efficacy has an impact on performance (Bandura, 1977, 1981). Bandura asserts that people develop their self-efficacy about a given skill based on past performance, experience through observation, social influences, and internal physiological feedback. Performance is thought to be the most important of these. In its most basic form, the theory would state that success raises self-efficacy and failure lowers it. Changes in self-efficacy for memory could be related to improvements observed in memory training. The relationship between training interventions and self-efficacy is complicated, however.

Several factors can influence self-efficacy during an intervention program: past experience with a task, present performance, outcome expectancies (an expectation that performance of the task will lead to a good outcome), selective

attention to some outcomes while ignoring other information about performance, and also interpretation of this information. For instance, if older adults focus their attention on their failures and attribute their memory failures to aging, a factor beyond their control, they will have low self-efficacy pertaining to memory (West & Bellott, 1990). Self-efficacy theory predicts that unless these issues are considered in a training program, the likelihood of a successful intervention is reduced because older adults will continue to form self-defeating explanations about their performance during and after training. If their beliefs about memory aging are not altered, it may not be possible for them to achieve long-term change in memory performance, in spite of increased skill levels achieved in training.

Yet another consideration in developing self-efficacy is the need to engender positive outcome expectancies in the trainees. The individual must think that they are skillful and can exert control over events to achieve a positive outcome, in this case be able to master a memory strategy. However, if older adults believe that they possess the ability to perform a task, but that other factors will still influence the outcome negatively, they are less likely to invest time and energy in the task (Schunk, 1985).

Self-efficacy offers a framework for understanding older adults' beliefs about their memory functioning and is probably related to the likelihood of learning effectively. Self-efficacy theory also offers ideas to guide developers of a training program. A sense of mastery or control is desirable to instill in people who have a greatly reduced sense of control. Therefore, it is important in training to have a preponderance of successful experiences that are viewed by the trainee as due to his or her efforts. This can be accomplished by developing a training program that exposes trainees to a high percentage of successes and few failures during training (Schunk, 1985).

Although self-efficacy is related to learning and performance, it has not often been included as a variable in memory training research with the elderly. Rebok and Balcerak (1989) examined the relationship between self-efficacy and memory performance after training. Young and older adults were put into two groups, one of which received instruction in the method-of-loci and one of which was the control group. The younger adults showed higher levels of self-efficacy and better recall before training. Training did not significantly reduce the age differences. One session of training for one hour improved recall but did not alter self-efficacy in either group. This is not surprising, as the interview did not focus on memory beliefs in any way.

Lachman and Dick (1987) examined the link between self-conceptions and memory training. They attempted to change attributions about memory and thereby improve self-confidence while also teaching the method-of-loci to older adults. Although training did not improve performance, the intervention was associated with greater self-confidence. This study indicated that memory training can have effects beyond the improvement of memory. Other investigators have also found positive changes in attitudes after training (Zarit, Cole, & Guider, 1981) even when the training did not focus on memory beliefs.

In these studies some consideration is given to other variables that affect memory improvement. There is some recognition that individuals interpret their performance and that individual's beliefs about themselves affect performance on memory tasks. Interventions that address cognitions could therefore be included in efforts to improve memory.

Cognitive Behavioral Model

Stanley and Maddux (1986) described the fit between self-efficacy and cognitive behavioral theories in regard to depression, and provide a model that

can be extended to cognitions in general. While the language in the two theories is different, the overlap in the conceptualization in the theories reflects a similar approach to understanding how people perceive themselves. Both refer to beliefs or internal attributions about the self and how individual lives within the world are affected by beliefs. In the integration of Stanley and Maddux (1986), the outcome expectancies (concerning the expected positive or negative cognitive/ behavioral contingencies) and self-expectancies (one's expectation about his/her ability to execute a behavior) of the self-efficacy theory can be related to the sense of personal competence, self-evaluations, and beliefs about the world found in the cognitive model.

Through the Stanley and Maddux (1986) integration, the importance of attending to attributions about oneself in a learning context can be understood. To create a sense of personal competence and positive valuation, a sense of self-efficacy is needed. It is important to engender a positive sense of self-efficacy, a belief that the individual can perform the task effectively. Coupled with a high outcome expectancy, learning should occur and be maintained.

It is particularly necessary to develop positive self-evaluations in trainees who devalue themselves, as older adults do. The devaluation is based in part on real decrements in ability over time, as well as from perceived changes in themselves and others. Due to changing coping skills, a negative world view could emerge in older adults as they encounter obstacles and difficulties in everyday living. As the perceived failures in their lives amass, they could become resigned to a diminished level of performance and decreased satisfaction from life. Put another way, when combined with low outcome expectancies, a negative world view will cause little or no effort to be exerted and the result is likely to be a negative outcome.

The self-efficacy theory could be characterized as a theory which addresses behavior and beliefs from a domain specific or micro-level frame of reference, whereas theories pertaining to complex cognitive constructs such as life satisfaction are more inclusive and entail a macro-level of conceptualization. In this case micro-level refers to a restrictively defined context, that is, memory functioning such as list learning and story recall, whereas macro-level refers to a larger grouping of behaviors and attitudes, that is, an individual's self-concept. In this case, the belief that one can perform a memory task is going to be based upon specific instances of memory functioning (micro-level), whereas life satisfaction is a supra-ordinate schema (macro-level) that might be based upon overall mental, physical, and social well-being.

However, this study is taking a more holistic viewpoint of a person, addressing the possibility that our training could create the link between the more microscopic view of memory performance and macroscopic perspective of life satisfaction. The training was designed, in part, to respond to and provide active positive support and reinforcement to the older adult trainees. During training positive self statements will be modeled which should later be generalized beyond the training. The training was also designed to reinforce positive affect, thereby increasing the amount of positive affect. The expectation therefore is that in the training there will be increases in self-efficacy which in turn can be used to increase life satisfaction, which is facilitated by the training or counselling style of training.

Without the counselling, that is with training that just provides the memory skills, there would be no changes in life satisfaction, which is on the macro-level. However, life satisfaction could improve with a counselling approach to training, for example, through counselling we can suggest or build upon and amplify the idea that the person has control over their memory

performance, and that they can generalize this to other aspects of their life, having greater increased happiness or life satisfaction.

Proposed Research

In this study the issues raised in the literature review are addressed, and effective memory training techniques are provided to older adults. The areas of concern in designing an effective memory training program were presented in the review and will be summarized here: time on training, strategy selection, the general approach to training, and maintenance.

As noted earlier, improvement in memory performance is more likely when training is more extensive. Therefore, there were six hours of memory training, spaced over a few weeks. In this training program, there was time for strategies to be learned, understood, and used in practice.

West and Tomer (1989) note that the greatest immediate gains in performance are in those training programs that focus on teaching one strategy for one task. The subjects did not learn one of the relatively exotic memory techniques, such as the method-of-loci, but were instead taught organization, a strategy that they probably already possessed. This training program focused on the use of organization for two memory activities (list and prose recall) that often occur in real life situations. The training was meant to bring this single strategy into awareness and then teach the subjects how and when to use it. Furthermore, concentration on one strategy simplified the learning experience and permitted a full exploration of the strategy's application.

The training program was designed to provide an individualized approach for each of the trainees. Each of the subjects was seen as an individual with their own memory problem, and as someone with the potential to address that

problem. The subjects were allowed to use the information they were given in a manner that suited their own strengths and weaknesses.

In addition to focusing training, teaching only one strategy may improve the retention of the learned material and increase maintenance (West & Tomer, 1989). Here, maintenance refers to the continued successful incorporation of the memory strategy into everyday life and the application of these techniques to similar memory tasks after training has been completed. The usefulness of the organization strategy in everyday living was emphasized.

Through this variety of approaches, this study would show that the individuals would be able to continue to use the most effective methods for recall of the to-be-remembered materials. This memory training program was designed to provide an opportunity for the subjects to learn that they could still learn and that they could be responsible for their own education and their own memory successes, which is consistent with self-efficacy theory.

In this investigation two types of memory training were used - - comprehensive and self-help. The comprehensive intervention entailed interactions between the trainer and the trainee, and included memory skills training and a counseling component. In the course of the comprehensive training some elements of counseling were used to address the memory related concerns of the individual trainee. Part of the training time was used to develop a relationship with the trainee, to attend to the trainee on a personal and individual level. Whereas the pretest assessment was used to gauge the individual's self-concept with regard to memory, additional time was spent discussing the individual's strengths and weaknesses. The trainees were allowed to express complaints about their memory functioning and empathic responses were made to these complaints. The trainers also helped the trainees to identify negative self-statements and to increase their understanding of how this internal

dialogue interferes with memory. Subjects were given frequent positive feedback for effort and to support their level of involvement in the training. To increase positive contingencies and motivation, the trainees were encouraged to make positive statements about themselves. Also, there was an attempt in this training program to implement a mastery approach to learning, and an awareness of the individual's sense of self-efficacy.

The homework assignments were an extension of this program. For example, homework assignments concerning ways to apply organization in the home were used. The use of homework involved the individuals on a deeper level and showed them how to employ the training in the home, while asking for a greater level of commitment. Through the homework, the trainees were encouraged to spend time assessing and reassessing their memory functioning. This was intended to not only give the trainees experience in self-monitoring, but to establish a positive attitude about skills and to motivate them to employ the techniques in the home.

In the comprehensive group, we were directly and indirectly intervening to enhance positive self-evaluations. It was our goal to reduce the number of negative cognitions regarding memory by creating positive experiences and by allowing the subjects to talk about their negative feelings and beliefs related to training. The primary intervention is labeled "comprehensive" because individuals' thoughts and feelings about their training are considered as integral to the program as the memory training itself. This approach is necessary if beliefs and self-evaluation are related to actual performance.

Therefore, the program was broad based in that attention was paid not just to the mechanics of learning a new strategy, but to the affect and attitudes attendant to learning. We asked the participants to alter their beliefs about

themselves and their perceptions of their memory skills, not to merely experiment or play with a new technique.

The subjects in the second training group were self-taught. These were offered written material that provided general information about memory and how to improve it. This group had a different type of interaction with the trainers, with significantly less personal contact than in the comprehensive group. The counseling component was absent in this group. During the course of this training, the trainees were not encouraged to express their thoughts and feelings about memory and their memory functioning, and they received no homework. The self-help group instead focused only on gaining information about memory and memory strategies. Therefore, memory skills might improve but no significant change in self-perceptions was expected. The most important difference between the two training groups then, is the lack of personal support in the self-help group.

In addition to memory performance and memory self-efficacy, the level of depression and general life satisfaction were also included as dependent measures in this study. On the micro-level of conceptualization, there are the memory performance and the self-efficacy variables: the individuals' memory performances and what they think about their abilities. On the macro-level, the emotional state of the person in training is also a factor. Therefore, an aspect of both positive and negative affect was assessed to determine the effect of training on an individual's general emotional state.

Hypotheses

1) Memory performance on grocery lists and stories will improve after training in both the self-help and comprehensive training groups, but not in the wait list control group. 2) Self-efficacy will be affected positively through the

comprehensive training, but there will not be a significant improvement in the other experimental groups. 3) It is also hypothesized that the comprehensive training will have an impact on affective states. Level of positive affect, or subjective well being, should be maintained and possibly improved. Level of negative affect, measured as depression, should decrease. We would not expect life satisfaction to improve in the self-help memory training group, but might improve in the comprehensive intervention group. This latter hypothesis is based on the greater likelihood of some integration of positive cognitions and improved self-concept in the comprehensive training.

METHODS

Subjects

The subjects for this experiment were community dwelling older adults who were assigned randomly to one of three groups - - one group that received the comprehensive intervention, a second group that received a self-help intervention, and a third group served as a wait-list control group. The volunteers ranged in age from 53-77 years and included both males and females. Refer to Tables 1 and 2 for demographic data. The subjects used for the study were all healthy community dwelling older adults with a minimum of six years of education. After random assignment to treatment conditions, the subjects were compared using a total score derived from four subscales of the WAIS-R: Vocabulary, Block Design, Picture Arrangement, and Information (see Table 1). There were no significant differences among the groups on this short form measure of intellectual functioning, or on educational level.

Before beginning the study, the potential subjects were contacted by telephone, and an interview was conducted. Demographic information was gathered, the reasons for wanting to be in a memory training program were explored, and general questions about health were asked. The exclusion criteria were based upon the need to have relatively healthy people without organic impairment involved in the study. Five people were excluded from the study due to psychotropic, hypertensive, or anti-seizure medication. One person had also suffered a recent head injury serious enough to raise doubts about their cognitive functioning.

Table 1: Mean and Standard Deviation of Demographic and Intelligence Data by Training Group

Variable	Control N=20	Self-Help N=19	Comprehensive N=25	Total N=64
Age	66.8	71.41	68.33	68.69
	sd 6.07	sd 4.37	sd 5.19	sd 5.52
Education	15.5	15.71	15.25	15.31
	sd 2.59	sd 2.82	sd 3.17	sd 2.86
WAIS Scale Scores				
Information	12.35	13.18	13.04	12.85
	sd 2.01	sd 2.48	sd 2.33	sd 2.26
Vocabulary	11.55	11.77	13.13	12.23
	sd 1.64	sd 1.52	sd 2.15	sd 1.94
Picture Arrang.	12.00	11.89	12.6	12.21
	sd 2.91	sd 1.32	sd 2.35	sd 2.29
Block Design	11.63	11.33	12.32	11.82
	sd 2.39	sd 2.25	sd 2.64	sd 2.45

Table 2: Frequency of Demographic Data by Training Group

Variable	Control N = 20	Self-Help N = 19	Comprehensive N = 25	Total N = 64
Sex				
Female	12	13	15	40
Male	8	6	10	24
Marital Status				
Married	14	9	17	40
Divorced	2	3	2	7
Widowed	4	6	6	16
Missing	0	1	0	1
Work Status				
Retired	12	14	15	41
Part-time	3	3	3	9
Full-time	5	0	2	7
Homemaker	0	2	4	6
Missing	0	0	1	1
Education Degree				
Pre-High School	0	0	1	1
High School	4	3	8	15
Some College	6	6	3	15
College Degree	5	2	5	12
Post College	5	6	4	15
PhD/MD/JD	0	2	4	6
Health Rating				
Good	13	15	20	48
Fair	6	4	5	15
Poor	1	0	0	1

Procedures

The initial meeting for all subjects consisted of a pretraining testing session during which a battery of assessments was given. For the trained groups, the memory training program took place over a three week period of time. Typically, the training instructor was the same individual who administered the pretest. Two 90 minute sessions were conducted during each of the three weeks, for a total of six sessions. After the memory training program, a posttest assessment session was conducted by another experimenter, blind to the subjects condition assignment. One month after posttest, the two training groups were given a follow-up assessment to examine maintenance of the memory training. The follow-up experimenter was usually another experimenter, blind to the specific training received by the subject.

The control group was inactive during the three weeks between their pretest and posttest. After completing the posttest assessment they were offered an opportunity to receive the self-help training. This was conducted using the same materials as were used in the self-help training, but during a shorter time span.

The posttest assessment was conducted approximately one month after the initial, pretraining testing. The same instruments administered in the pretesting were used for the second assessment. Grocery lists and stories different from those used in the pretest were presented to test recall performance. The follow-up assessment was conducted approximately two months after the initial assessment. The instrument measuring self-efficacy and a third list and story were used at this final testing.

Test Battery

The test battery was presented using four counterbalanced orders of presentation for tests of four types: intelligence (WAIS-R subscales), memory (list recall and prose free recall), memory evaluation (Memory Self-Efficacy Questionnaire), and affective factors (Geriatric Depression Scale and Life Satisfaction Inventory). In addition, within each of these above types of dependent variables, test order was counterbalanced.

Personal information collected during the pretest or the telephone interview included marital status, years of education, employment status and occupation, and medications currently being taken. Additionally, a self-rating of the subject's general health was elicited.

Memory Evaluations

The Memory Self-Efficacy Questionnaire (MSEQ; Berry, West, Dennehy 1989) is a self-report inventory designed to obtain measures of a form of cognitive self-efficacy, called memory self-efficacy. This inventory is specific in that it describes specific memory tasks as opposed to asking global self-assessment questions. For each task, subjects are asked to indicate whether or not they believe they can perform the task described by responding YES or NO. If they believe they can perform the task, they are also asked to circle a number indicating their degree of confidence about this decision. Below is a sample item from the MSEQ:

"If I went to the store the same day I could remember 18 items from a friend's grocery list of 18 items without using a list."

NO YES 10% 20 30 40 50 60 70 80 90 100

Self-efficacy level (SEL) and self-efficacy strength (SEST) scores are tabulated from the MSEQ. The self-efficacy level score is an individual's

evaluation of their memory skill and is calculated by counting the total number of "yes" responses. The self-efficacy strength score is a measure of the individual's confidence in their self-assessment. The SEST is derived from the average of all confidence ratings from all of the tasks. The individual's self-efficacy is measured on each task using questions arranged on a descending scale of difficulty. An example of this is the list recall task. The question begins by asking if the individual can accurately recall an 18 item list, followed by a question about their ability to recall a 14 item list, an 8 item list, then a 4 item list, and finally the individual assesses their own ability to recall a 2 item list. This set of five questions forms a scale for that task (there are a total of 10 scales), and the scale score is based on the highest level of difficulty endorsed by the individual. The SEL scores range from 0 to 50 and the SEST scores range from 0% to 100%. For older adults taking the MSEQ, the mean inter-scale correlation was .48. Reliability for the SEL was $r=.85$ or greater in four sample groups. SEST scores show a reliability of $r=.82$. The mean inter-scale correlation was .53 (Berry et al., 1989).

Affective Measures

Depression was measured by the Geriatric Depression Scale (GDS) (Yesavage, Brink, Rose, Lum, Huang, Adey, & Leirer, 1983). The GDS is a 30 item scale referring to how the person felt during the past week, e.g. "Do you feel full of energy?" The responses are a forced choice YES or NO. The 30 item scale contains both affirmative and negative statements which would indicate depression. The total scale score is created by adding one point for each response that reflects depressive affect, with possible scores ranging from 0 to 30. A high score indicates high levels of self-reported depression. For the subjects used in the validation of this instrument, the mean score for normal

subjects was 5.75 and the mean score for mildly depressed subjects was 15.05 (Yesavage et al., 1983). Alpha scores for the GDS was .94. Test-retest and inter-rater reliabilities of .86 and .85 were also reported. Validity for this instrument was established by classifying subjects with one of three levels of depression and then comparing each groups scores on the GDS. The strong significant results obtained in this manner provide support for the validity of the GDS (Yesavage et al., 1983).

Subjective well being was assessed using an instrument based on Liang's (1985) work that has integrated the Affect Balance Scale (Bradburn, 1969) with the LSIA (Liang, 1984) to create an instrument that measures subjective well being (LSIA-ABS). Four dimensions have emerged from research with this integrated set of items: congruence, happiness, positive affect, and negative affect (Liang, 1985). The 15 items have both a short and long term time frame. The instrument is global in nature, and has both cognitive and affective components. A high score indicates a strong positive sense of well being.

Memory Performance

Memory performance was assessed through free recall of lists and short stories. There were three 16 item shopping lists used in this study, a different one for each of the pretest, posttest and follow-up assessments. The lists were generated from a pool of items gathered from older adults who were asked to make a typical 15 item shopping list (West & Walton, 1985). The experimental lists had items from three grocery/department store categories and the items were selected for concreteness. The lists were presented one item at a time, both verbally and visually, with a five second interval between items. After presentation of all 16 items, the subjects were asked to perform immediate free recall of the list.

The three prose passages used in the free recall were developed by Dixon, Hultsch, and Hertzog (1989). The authors designed passages with varying levels of difficulty, as measured by propositional analysis. The stories used for this assessment were of moderate difficulty and were structurally and semantically equivalent. Each of the stories had approximately the same number of words and propositions, and similar numbers of propositions in each sentence. In this study, the passages used contained 16 sentences and approximately 200 words, with an average of 114 propositions. Subjects were assigned to a different story for the pretest, posttest, and the follow-up assessments.

Scoring for the memory of the stories used a propositional system that was also developed by Dixon, Hertzog, and Hultsch (1989). The analysis of the passages was based on their development and structural characteristics, so that the meaning of the passage is conveyed within a set of idea units. The system of structured proposition scoring sets was designed to account for a paraphrase of the propositions, instead of requiring verbatim recall. Therefore, if a paraphrase of the propositions was remembered, the proposition was scored as correct.

This prose material was used to create three scores based on the number and type of propositions: total, superordinate, and detail. The total number of propositions recalled for a story was derived by adding up the total number of propositions remembered. The superordinate proposition score represents the number of general information idea units that were recalled from the story. Examples of superordinate propositions are the main theme and the central idea of each sentence of the story. Finally, the detail proposition score was derived from the number of specific idea units recalled from the story. For example, detail propositions from these stories were idea units pertaining to specific days and locations.

Memory training program

Subjects in the comprehensive group and the self-help group were trained individually, twice a week for three weeks, making a total of six 90-minute sessions. Each training session had didactic and experiential components. Each training session included discussion about ways to enhance memory performance with a focus on organization. After the initial session, each of the training conditions in the program included practice with encoding and retrieval within each training session. This created familiarity with the strategy and the tasks, as well as helping to motivate the trainees (West & Tomer, 1989).

In order to accurately assess the effectiveness of comprehensive training, it is necessary to differentiate between the impact of the training content and the accompanying social support. A comparison group using a second type of training was created for this purpose. Relative to the comprehensive training group, subjects in this self-help group were given very similar factual information regarding memory functioning. They also received similar guidelines for memory improvement and were given the opportunity to practice the critical memory tasks. The important difference between the two groups was the focus, in the comprehensive group, on raising self-efficacy and maintaining memory techniques in their everyday life.

Homework, assigned to individuals in the comprehensive group, was to be completed between sessions, and comprised activities that encouraged the continued practicing of organizational strategies. The subjects were asked to make up their own to-be-organized material, to have them gain a greater appreciation for how well they were already using organization in their lives, and to see how it could be applied in the home. Homework was used as a means to help integrate the training into everyday memory tasks and also served a motivational function.

An effort was made to keep the training time (75 to 90 minutes) equal for the two groups. Because the comprehensive group spent time discussing homework and individual issues (e.g. negative self-perceptions, ways to maintain motivation, etc.), filler articles were needed for the self-help group. These articles discussed age related changes in sensation, caregiving, etc. Also to fill time, these subjects completed an evaluation form for each session and an overall evaluation at the end.

In the first session, the readings for the self-help group provided basic information about memory and aging, the same information that was provided to the comprehensive group in a discussion format. A trainer was available to discuss the main points in the readings if the self-help trainee chose to do so. The trainers in the comprehensive group began the counseling intervention in this session with a discussion of stereotypes and negative self-concepts that limit an older adults' memory success.

Session two focused on organization. Different types of organization were presented, either in discussion (comprehensive) or readings (self-help). All training subjects were given simple practice lists and stories. Unlike the comprehensive group, trainers in the self-help group took no active part in motivating the trainees to complete the exercises, however, most participants completed them.

During training sessions three and four, comprehensive trainees were taught how to identify and use list categories to aid memory and they were instructed in the PQRST method as a way to organize and remember stories (West, 1985). The self-help group continued reading about ways to organize and remember information, including the use of categories and the PQRST method.

Both training groups had a large practice component in sessions three through six. The subjects in the self-help group were allowed to use whatever memory technique they chose and they were allowed to work at their own pace. The trainers in this group were instructed to minimize their contact with the subjects, and they refrained from offering encouragement or specific directions. In contrast, comprehensive trainees were strongly encouraged to use organization and were given feedback about their success during practice.

Lists and stories that varied in difficulty were used for practice. For the self-help group, the order of the list and/or story practice was random. For the comprehensive group, lists and/or stories were presented in a gradually more difficult manner so that the subject could perceive the acquisition of mastery. The sets of practice lists began with six simple words to recall and progressed to learning lists composed of 9 and then 12 words, until by the 6th session, subjects were practicing with lists 15 words in length. In each practice session, subjects began with the easiest level and worked their way to more difficult tasks by achieving 80% correct on two consecutive lists. At each level of difficulty, subjects had the opportunity to practice by manually sorting the lists by category, to familiarize themselves with the strategy. The remaining lists at each level were presented orally and visually one item at a time.

Prose recall practice began with a four sentence story and progressed to longer paragraphs with more complex information. The more difficult stories were divided into levels composed of 8, 12, and 16 sentence stories. Subjects read at their own pace, and then tried to recall a story. The criterion level for mastery was 80% correct on two consecutive stories which had to be determined subjectively by the trainer (it was not possible to do immediate propositional scoring). When the criterion was reached, the trainee began working at the next highest level of difficulty.

In the comprehensive training, the fifth and sixth sessions emphasized the trainees' individual needs, beliefs and difficulties with the strategies. There was an exploration of how to employ organization in everyday life. In both groups, additional practice was given. Sessions five and six of the self-help training also had readings on organization. Additional practice with stories and lists, varying in difficulty, was also offered.

The training program for the self-help and comprehensive conditions were highly similar, yet there were some critical differences between them. The self-help program provided subjects with written information on how to improve their memory functioning with most of the reading focusing on organization. The comprehensive group was provided similar information in a discussion format and the discussion included counseling issues. Training in both groups centered around memory and organization strategies, but the presentation varied. The subjects in the self-help group did not have practice designed to improve their self-efficacy because their practice was not mastery oriented, nor were they given encouragement and support for their practice efforts. Subjects in this group were allowed to proceed in a manner that they chose and use whatever combination of techniques they desired to practice. In contrast to the comprehensive group, the self-help subjects were neither given homework nor encouraged to employ organization in the home. In this group the subjects were exposed to researchers who provided information, but did not offer any motivation. Taken together, the differences between the two groups represent a counseling approach utilizing cognitive interventions in the comprehensive group, and a general information intervention in the self-help group. Yet the total time in training, total practice time, and emphasis on organization were similar.

RESULTS

This section discusses the dependent variables in this study which were hypothesized to show some training effects. These variables include memory performance, self-efficacy, and affective measures. The data from the post-training assessment was analyzed in relation to the pre-training assessment using ANCOVA, analysis of covariance. The analysis entailed analyzing the posttest scores of the groups with the pretest variance removed. The follow-up scores of the self-help and comprehensive groups were analyzed using repeated measures.

The dependent variables for memory performance were number correct on list recall and memory for stories (total number of propositions, superordinate propositions, and detail propositions). The self-efficacy variable was assessed using the self-efficacy level (SEL) and self-efficacy strength scores (SEST) from the Memory Self-Efficacy Questionnaire. The affective variables were measured using a life satisfaction/well-being score from the Life Satisfaction Index A - Affect Balance Scale (LSIA-ABS) and depression as measured by the Geriatric Depression Scale (GDS). The independent variables in this study were condition of training (comprehensive, self-help, and control groups) and time of assessment (pre, post and follow-up). Scheffe posthoc tests ($p < .05$) were conducted where appropriate to determine confidence intervals for significant differences in the group comparisons.

Two graduate students were trained to score the stories used in the prose recall by using propositional analysis. The student raters were blind to the identity of the subjects and to their experimental assignment. Twenty-nine stories were scored independently by both students, 13 of Story A, 8 of Story B

and 8 of Story C. The scoring was two-fold, one, to determine the number of correct propositions of different levels of complexity and, two, to generate the total number of propositions for each story. The interrater reliability was calculated and a high correlation between ratings was obtained: for story A ($\underline{r}$ = .94), story B ($\underline{r}$ = .97) and story C ($\underline{r}$ = .93). Based upon this level of reliability, the decision was made that each of the graduate students score half of the remaining protocols.

Analysis of the demographic data, showed no differences between the three training condition groups on age, years of education, or intelligence screening. The intelligence screening was conducted using the WAIS-R scales for Information, Vocabulary, Picture Arrangement, and Block Design. The groups were similar with respect to age and levels of intelligence, two variables that have been related to memory performance results. Table 1 displays the means and standard deviations of many of the demographic measures and Table 2 displays the frequencies for the other demographic data by training group.

<u>Analysis of Training Effects</u>

The memory performance variables (prose and list recall) were examined using analysis of covariance, comparing posttest scores for the two training groups and the control group with pretest variance removed. Table 3 and Table 4 display the means and standard deviations of the dependent variables for pretest and posttest. Due to equipment malfunctions and incomplete questionnaires there was some loss of data at each assessment. Therefore, there is some variability in the number of subjects used in the different comparisons. The w^2 sign represents omega squared.

ANCOVAs were conducted on the memory performance data. There were no significant group differences on the posttest list recall measure. In the

analysis for total, superordinate and detail propositions, only total propositions approached significance, $\underline{F}$ (2, 56) = 2.92, $\underline{p}$ < .06, $\underline{w}^2$ =.09. Scheffe posthoc tests ($\underline{p}$ < .06) showed that the comprehensive group and the self-help group remembered more total propositions than the control group on the posttest. The comparisons of the number of superordinate prose propositions recalled and the number of detailed propositions recalled did not reveal any significant group differences at posttest (see raw score means in Tables 3 and 4).

The results for the self-efficacy measures show that at posttest, there was a significant difference found between the three training groups on self-efficacy strength, SEST, $\underline{F}$ (2, 59) = 3.12, $\underline{p}$ <.05, $\underline{w}^2$ =.03. The Scheffe posthoc test indicated that the comprehensive group showed higher SEST at the posttest than the control group, ($\underline{p}$ < .05). The self-help group scores fell in-between scores for the control and comprehensive groups, and were not significantly different from either group. There were no significant group differences on self-efficacy level, SEL (see Tables 3 and 4).

There were no group differences on the affective measures, LSIA-ABS and GDS, at posttest.

Analysis of Follow-up Data

The follow-up assessment was conducted on the self-help and comprehensive groups one month after the training was completed. The follow-up assessment data were compared to the pretest and posttest data by using repeated measures analyses for memory performance and self-efficacy. In this analysis, Time (pretest vs. posttest vs. follow-up) was used as a within subjects variable and Condition (self-help vs. comprehensive) was used as a between subjects variable, and the Time X Condition interaction was assessed. The

Table 3: Mean and Standard Deviation by Training Group at Pretest

Variable	Control N=20	Self-Help N=18	Comprehensive N=25	Total N=63
Self-Efficacy				
Level	24.5	22.22	24.44	23.83
	sd 6.75	sd 8.27	sd 6.92	sd 7.18
Strength	46.28	44.72	44.08	44.96
	sd 15.16	sd 19.36	sd 16.50	sd 16.71
LSIA-ABS	10.75	10.56	9.44	10.18
	sd 2.81	sd 2.73	sd 3.71	sd 3.19
GDS	4.5	4.11	3.44	3.98
	sd 3.97	sd 4.38	sd 2.9	sd 3.68
Immediate Recall	10.65	12.28	11.64	11.51
	sd 1.93	sd 2.45	sd 2.00	sd 2.18
Propositions				
Total	33.74	32.35	42.25	36.75
	sd 13.69	sd 11.92	sd 13.5	sd 13.69
Superordinate (1)	0.419	0.433	0.562	0.48
	sd 0.18	sd 0.181	sd 0.163	sd 0.184
Detail (1)	0.218	0.214	0.28	0.241
	sd 0.113	sd 0.093	sd 0.118	sd 0.113

Note: LSIA-ABS is the integrated measure of subjective well-being, and GDS is the Geriatric Depression Scale.
(1) These figures represent a percentage of the possible correct propositions for each type.

Table 4: Mean and Standard Deviation by Training Group at Posttest

Variable	Control	Self-Help	Comprehensive	Total
	N = 20	N = 17	N = 25	N = 62
Self-Efficacy				
Level	24.1	25.29	27.48	25.79
	sd 7.02	sd 8.12	sd 6.97	sd 7.34
Strength	45.29	53.13	53.24	50.65
	sd 15.44	sd 19.25	sd 19.29	sd 18.21
LSIA-ABS	10.70	11.06	9.8	10.44
	sd 2.94	sd 2.95	sd 3.32	sd 3.10
GDS	3.55	2.71	2.88	3.05
	sd 3.30	sd 4.01	sd 2.91	sd 3.30
Immediate Recall	11.10	11.41	11.20	11.23
	sd 2.29	sd 2.81	sd 2.97	sd 2.68
Propositions				
Total	36.05	46.06	43.75	41.97
	sd 9.22	sd 16.6	sd 13.81	sd 13.87
Superordinate (1)	0.528	0.59	0.582	0.567
	sd 0.14	sd 0.167	sd 0.128	sd 0.144
Detail (1)	0.218	0.309	0.286	0.271
	sd 0.097	sd 0.154	sd 0.14	sd 0.135

Note: LSIA-ABS is the integrated measure of subjective well-being, and GDS is the Geriatric Depression Scale.

(1) These figures represent a percentage of the possible correct propositions for each type.

control group were not assessed at one month follow-up, therefore no data for this group was included in the analysis. Table 5 displays the means and standard deviations of the dependent variables for follow-up.

There were no differences for Time or Condition on immediate list recall nor was there a significant interaction. For both training groups, there was a significant difference in prose recall performance at the time of the one month follow-up when compared to pretest scores. For total propositions there were significant differences for Time, F (2,66) = 24.37, $p > .001$, w^2 =.17, and a significant interaction of Condition and Time, F (2,66) = 3.91, $p < .05$ w^2 =.01. The self-help group was lower at pretest than at posttest and follow-up. Both training groups had comparable scores at follow-up that were significantly higher than pretest scores, but the self-help group had a greater change from pretest to posttest. While this interaction is statistically significant, it is an artifact of initial sample differences in the groups because the comprehensive group was higher at pretest than the self-help group. For the superordinate propositions in the stories there was a significant change over Time, F (2,66) = 4.42, $p < .05$, w^2 =.04, and an interaction that approached significance, F (2,66) = 3.00, $p < .06$, w^2 =.02. There were no Condition main effects for detail or superordinate propositions. For details, there was a main effects for time, F (2,66) = 12.72, $p < .001$, w^2 =.11, and a significant interaction, F (2,66) = 3.65, $p < .05$, w^2 =.02. For both superordinate and detail propositions the self-help group had a lower recall score at pretest than at posttest and follow-up. Both training groups had higher scores at follow-up than at pretest. As expected, this is similar to the results for total propositions.

The repeated measures analyses conducted on the self-efficacy measures revealed a significant main effect of Time for self-efficacy strength, F (2,82) =3.31, $p < .05$, w^2 =.01, but no differences by training condition and no

Table 5: Mean and Standard Deviation by Training Group at Follow-up

Variable	Self-Help N = 16	Comprehensive N = 21	Total N = 37
Self-Efficacy			
Level	27.06 sd 6.87	28.74 sd 7.11	28.03 sd 7.15
Strength	54.72 sd 16.78	52.13 sd 18.43	52.44 sd 17.75
Immediate Recall	11.69 sd 2.65	11.78 sd 2.41	11.65 sd 2.49
Propositions			
Total	55.00 sd 15.03	54.95 sd 15.82	54.97 sd 15.27
Superordinate (1)	0.579 sd .142	0.595 sd .152	0.588 sd .146
Detail (1)	0.392 sd .128	0.36 sd .127	0.374 sd .127

(1) These figures represent a percentage of the possible correct propositions for each type.

interaction for either measure of self-efficacy. There was an increase in self-efficacy from the pretest to the posttest on SEST. There were no significant differences on self-efficacy level.

No follow-up assessment was conducted on the affective measures, GDS and LSIA-ABS, therefore no analysis was performed.

DISCUSSION

This study was designed to examine the effects of individualized memory improvement training on memory performance, memory self-efficacy, and affect in older adults. It was hypothesized that when compared to a wait-list control group and a self-help memory training group, a comprehensive training approach would result in significant improvement in recall performance for list and prose material, as well as enhance the individual's sense of subjective well-being and decrease negative affect.

The results of this study did not support all of the experimental hypotheses that were made based on earlier research. Neither of the training groups showed a significant effect on free recall of lists at either the posttest or at follow-up assessments, but there were significant group differences on prose memory performance at the posttest and even higher prose recall scores at the follow-up assessment. Relative to the control group, memory self-efficacy strength was higher for the comprehensive group at posttest, and both training groups showed significant changes from pretest to follow-up in self-efficacy strength. Therefore, there was some evidence for maintenance of significant differences over the intervening month, an indication that some progress had been made toward cognitive life-style changes.

Past research suggests that training programs improve list recall with older adults (Yesavage et al. 1984), but no significant difference in list recall were found here for either training group at posttest or follow-up assessment. These results occurred even though the subjects in the comprehensive group were given three opportunities to practice the list organization strategy within

session, and fulfilled homework assignments to use list organization in their everyday lives.

The subjects reported that they enjoyed the training, and they felt that they had benefited from the training. Yet a significant difference in list recall performance did not occur. A possible explanation for the lack of significant differences in list performance could be that ceiling effects occurred. With a pretest mean of 12, the 16 item lists used in the assessment might have been too short to show significant differences in memory performance over time. The standard deviations in the list scores for the groups indicates that some of the subjects in each of the groups were recalling most of the words at pretest. This provides some evidence that a ceiling effect occurred. It is also possible that using only one list may not have allowed for adequate sampling of performance skills. Some of the previous studies used more than one list and story during assessment (Scogin et al., 1985). In the future, longer, multiple lists might provide more opportunity for performance differences to be in evidence.

There may have been factors in the experimental design that hindered performance on the list recall task. The training procedure in this study differed from the actual assessment procedures in two respects. One was on the amount of time with the material to be recalled. During the training, in both the comprehensive group and self-help groups, subjects were practicing recall of lists at a slower pace than during the assessment. The other difference between training and assessment is that, during training, the subjects wrote their responses, whereas during the assessment responses, were given orally. Without written responses, visual organization and inspection were impossible. The subjects in the two training groups were exposed to the idea of using external aids like writing to-be-remembered material. The testing situation did not take advantage of this training. In future research, testing of list recall should be self-

paced to provide trainees with sufficient time to utilize all the organization skills they learned in training and allow subjects the opportunity to write down their own responses.

Prose recall showed some differences between groups at posttest, but the difference only approached significance. This is surprising in light of the type of information that a story can provide as a memory task. Prose material has some organization inherent in it, as well as internal associations. For example there is the logic of the storyline, and the stories used had temporal cues within them (time passed in the stories). The training emphasized the use of the memory cues, and taught a proven strategy for improving recall (PQRST). Those subjects in the comprehensive training had ample practice with the method and the task was familiar to them. Flynn and Storandt (1990) did not find a significant differences in prose recall in their memory training program. They suggested that the subjects may have invested in a level of effort in the new technique that was detrimental to their recall performance. This explanation may also have some validity in this study. It is possible that the trainees were focusing on the act of using their new strategy, instead of using it effectively.

It might be helpful to try and determine what different people are doing during memory assessments. Although this would be based on self-report, it might have been useful to determine what the subjects thought they were doing during recall assessment. In the future, it might be interesting to determine the number of people who were actively using a strategy before training. The supposition is that older adults have reduced their usage of memory strategies (Worden & Meggison, 1984), but some older adults may still be using some form of memory strategy. For example, the trainees in this study were active, community dwelling adults. A few were still working, several were volunteering their services, and most of the rest were involved in recreational

activities that were physically and mentally stimulating. For these individuals, a memory training program designed to maintain effective memory performance would be more useful and possibly even necessary.

Delayed recall of newly learned material has been used in memory research to measure long term memory performance (Scogin, Storandt, & Lott, 1985). However, within session delayed recall for stories and lists were not used as measures of performance in this study. A delayed recall measurement would allow the exploration of the effectiveness of the newly learned strategy in a testing situation that entailed various lengths of elapsed time and different levels of interference from other assessment tasks. It may be that the effectiveness of a memory strategy would be more apparent as the complexity of the memory performance tasks increases. In the future, delayed recall could be used as an additional measure of memory improvement after training.

There was a significant difference in self-efficacy strength at posttest between the comprehensive group and the control group. A significant difference was also found between pretest and follow-up for each of the training groups. This relatively extensive training probably changed the subjects perception of positive outcome and of their abilities. Rebok and Balcerak (1989) speculated that the lack of improvement in self-efficacy level and strength after training in their study was due to the short training time. In contrast, this intervention provided the trainees in both groups with actual memory task experience and accurate feedback over several sessions, so that self-evaluations could become more reflective of actual skills.

For the trainees in both groups these judgments about self-efficacy were probably based upon one of the four sources of information Bandura (1981) identified: performance accomplishments.. The subjects became more confident and comfortable with the tasks, and the lists may have been redefined as more

manageable. By actively engaging in the tasks, and reassessing their performance during multiple practice trials, they began to perceive themselves as capable of remembering lists. Since their skills were improving, the trainees developed a sense of mastery of the skill, so that self-efficacy also improved.

Scogin, Storandt, and Lott (1985) point out that attitudes and expectancies about memory performance may be as important to address in training as performance. This is consistent with Bandura's (1981) description of how to develop a sense of mastery of a task and produce the most positive beliefs about skills. In accordance with the theory, the trainee's increased mastery should lead to outcome expectancies that change in a positive manner. This would lead to an increased sense of self-efficacy, even if the outcome performance variables showed no change.

Schunk (1985) discusses aspects of an effective learning environment in a manner highly similar to Bandura's (1981) conceptualization. Two of the aspects were given particular consideration in this study: feedback and goal achievement. In this study the subjects in the comprehensive group experienced a clearly measurable change in their performance on the organization task during training. The gradual increases in the difficulty of the training material allowed the trainees to experience firsthand their abilities to achieve their training goals of improving their performance. By providing positive feedback, the trainers were engaging in verbal persuasion regarding the trainees abilities. The self-help group may have generated their own feedback from observing successful practice efforts.

Compared to pretest scores, there were significant differences in prose recall performance and memory self-efficacy strength at one month follow-up. This seems to indicate that the effects of training were maintained and extended beyond the training period. Scogin et al. (1985) and Flynn and Storandt (1990)

also found maintenance of strategy training at follow-up. This study produced some findings consistent with this research, as well as the work of Stigsdotter and Backman (1989). Stigsdotter and Backman (1989) established support for the idea that multiple training sessions can lead to maintenance of newly learned skills after training has ended.

The memory training review of West and Tomer (1989) suggest that a longer training would be more effective. Subjects in this study seemed to think they had benefited from the relatively lengthy training in this study. As in the research of Sheikh, Hill, and Yesavage (1986) the practice was spread out over time and the trainees in both training groups had time to process what was occurring to them. The longer training program allowed the individuals in the training groups the opportunity to develop confidence in their abilities, which was manifested in increased self-efficacy scores. This is consistent with the findings of Rebok and Balcerak (1989). The extended training also allowed the subjects to understand the organization strategy for the prose recall.

Unfortunately, the lack of a control group in the follow-up comparisons means that practice effects could be a potential explanation for improvements on the follow-up assessment. However, there are reasons to believe that practice was not the critical factor. In regards to practice effects and self-efficacy, research has shown (West & Bellott, 1990) that self-efficacy levels measured with the MSEQ often decrease upon retesting. Therefore, practice effects probably do not account for the increases shown here. For prose recall, training effects at posttest clearly exceeded the small practice effect observed in the control group. Thus, it is unlikely that the gains observed at follow-up were due to practice.

The data also provide some support for training related explanations for improvements in prose recall at follow-up that exceed changes due to practice

effects. Looking for trends in the proposition recall means of the groups reveals the control group did not reach the same levels of performance as the self-help and comprehensive groups did at posttest. In fact, at posttest the control group showed no gain over the pretest, showing that no practice effect occurred. Although these data can not be extrapolated to the follow-up, it does suggest that the increases in performance at follow-up were not solely due to practice effects.

In this study there was not a significant change in reported levels of depression. This may be in part due to the lack of significant clinical depression in the sample of community dwelling older adults. Since the group as a whole was not suffering from negative affect, there would not be any change in their affective status.

Memory training coupled with the cognitive behavioral interventions was not related to significant differences in the subjective well being of the subjects in this study. Bandura (1981) emphasizes that self-efficacy is tied to specific performance domains which suggests that only those beliefs and attitudes related to those domains would be affected by an intervention. Previous self-efficacy research has been conducted with this in mind. In this study, an attempt was made to link the effects of an intervention on a micro-level with results on a macro-level. In this case, from memory performance to an increased sense of well being.

It may be that increases in the level of life satisfaction and happiness simply are not open to change by a short program of skill enhancement, no matter how effective. Life satisfaction is related to many other variables; it is a summation of numerous variables which impact and are interpreted by the individual. As conceived here, life satisfaction is a macro/meta cognitive function which is composed of micro-level skills, beliefs and attitudes. Some theorists (Horowitz, 1988) believe that an individual's self-concept is composed

of numerous self-schemas which are based on multiple experiences and how we make sense of those experiences. Therefore, changing an individual's self-concept would probably require affecting change on several self-schemas. In other words, self-concept is a superordinate schema based upon an aggregate of schemas including but not limited to beliefs about one's memory, physiology and physical talents, and social skills. To increase an individual's sense of well-being would require a program of interventions designed to have an impact on several beliefs and attitudes regarding the self.

Flynn and Storandt (1990) used a contact group very similar to this study's self-help group. In their research, Flynn and Storandt found that the group receiving the additional personal contact, as compared to only bibliographic training, resulted in significant differences in performance. As in the earlier research, the members of the self-help group in this study received a thoughtfully designed and focused approach to memory improvement. These trainees were motivated to learn and accepted the challenge to pursue memory improvement in a self-help program. While their program was self-paced and did not include a comprehensive training intervention, the trainees had structured contact with their trainers each session which may have given them additional impetus to learn the material. These results, therefore, may not be fully generalizable to individual home study. Future research replicating this study might include a bibliographic intervention without trainers as an additional group for such a comparison.

There were few differences in training effects on performance between the two groups that received training. Therapeutic outcome measures such as self-reports from the trainees about their progress after each session might have been used to explore what other effects were occurring in the comprehensive training approach. Based upon the self-report of the trainees at the end of

training, it appears that these older adults felt they had benefited from the memory program. It could be that the counseling approach to training had an impact on the subjects that was not measured.

Poon, Walsh-Sweeney, and Fozard (1980) emphasized the importance of the individual older adult in memory training. An intervention that considers the whole person individually may be more expensive to implement, but may reap the greatest rewards. This study suggests older adults are willing to invest their own time and energy to improve their memory performance and that they can benefit from a memory training intervention.

An additional positive aspect of memory training is that it brings elder persons into contact with mental health service providers. It has been pointed out that older adults do not seek counseling for personal problems, yet are more receptive to "by the way counseling" (Waters, 1984). Tomine (1986) suggests that older adults are most receptive to interventions that provide education and, at the same time, solve the problems they encounter. These two concepts are used in this study. Direct interventions for a specific "problem" of aging (memory functioning), and counseling for issues related to this problem were offered. The subjects in this study were provided information about memory functioning particularly in relation to the aging process. They were offered a strategy to improve their memory and the subjects in the comprehensive group were offered the opportunity to discuss their memory problems and their experiences in the training program.

This research indicates that psychologists can offer useful programs for improving the memory of older adults. Whether in formal training programs or in self-help (bibliotherapy) that is supplemented by interaction, memory improvement is a viable option for improving the memory performance of this population. Future research needs to continue exploring the ways higher order

functions, such as strategies, can be taught and enhanced. Older adults may have immutable decrements in some aspects of their cognitive functioning, particularly on speeded tasks, but higher order or executive functions appear to be available for enhancing overall memory. In other words, while real organically related changes may occur, those cognitive functions which remain relatively unaffected by aging appear to be available for enhancing cognitive functioning. Older adults can have the possibility of improved memory functioning on some tasks through strategy acquisition.

In summary, the individualized memory training programs used in this study were related to significant differences in self-efficacy strength between the comprehensive and control group at posttest. Both of the training groups had significant differences in self-efficacy strength from pretest compared to one month follow-up. There were additional significant differences between pretest and follow-up for total, superordinate, and detail propositions. Hypotheses pertaining to improved list recall, decrease in negative affect, and increases in life satisfaction related to the memory training were not supported.

APPENDIX A
IMMEDIATE AND DELAYED RECALL LISTS

Shopping List A	Shopping List B	Shopping List C
orange juice	coffee	milk
cereal	oatmeal	bran cereal
spaghetti	pizza	chili
ice cream	candy	chocolate
bread	rolls	muffins
hamburger buns	crackers	cinnamon rolls
oranges	apples	grapefruit
biscuits	donuts	cake
grapes	bananas	pears
cotton balls	eye drops	bath soap
Advil	Bufferin	Tylenol
magazine	paperback book	TV Guide
Alka Seltzer	Pepto Bismol	Rolaids
birthday card	stamps	newspaper
pen	film	pencil
stationery	photo album	notepad

APPENDIX B
PROSE PASSAGES FOR STORY RECALL

Story A: A Vacation

Harry was excited about his first visit to the Grand Canyon. His son, Gerald, and his daughter-in-law, Sally, had invited him to come along on their vacation. His energetic five-year-old grandson, Jason, was also there. On their first day Gerald and Jason rode mules down to the river at the bottom. Harry spent part of the day talking with a tour group of senior citizens from Phoenix. Then he went with several of them on a short hike. The next day he and his family had a picnic near a ranger station. The weather each day was beautiful, with warm temperatures and very dry air. Everyone is glad that they waited until September to take their vacation. Summer in Arizona is too hot and the crowds at the Grand Canyon are too thick. Their drive from Topeka, Kansas was cool and comfortable. The first night they stayed in Garden City, Kansas, where Harry's younger brother lives. The next night they stayed at a motel in Gallup, New Mexico. On the third day they drove through the beautiful Petrified Forest National Park. Jason was enchanted by the real Navajo Indians. They arrived at the South Rim of the Grand Canyon in late afternoon. Harry couldn't wait to see what this marvel of nature looked like up close. He wasn't disappointed. He was dazzled by the depth and breadth of the canyon.

Story B: Playing Cards

Tom and Barb's Canasta Club is meeting at their home tonight. There are three other couples, so there are tow tables for playing doubles. Sometimes they draw cards for partners and sometimes they play couples. Tonight, at both tables the men are playing against the women. Barb and her partner, Pat, won the first game against Tom

and his partner, Joe. Tom is a good sport but Joe is a sore loser. He is still teasing Tom about a mistake he made early in the game. Joe seems happier now, probably because he and Tom are already one thousand points ahead. Barb occasionally checks the other table to be sure that they have plenty of refreshments. Tonight they have peanuts, popcorn, pretzels, and assorted candies. Barb is also serving plenty of coffee, soft drinks, cocktails, and white wine. Usually, these Canasta parties last from eight in the evening until around midnight. Because everyone enjoys them so much they sometimes last much longer. Two weeks ago they played Canasta until 2:00 a.m. and then Crazy Eights and Gin Rummy until almost dawn. Once they played only one game of Canasta and then switched to Trivial Pursuit. Everyone comes faithfully to the meetings.

Story C: Camping

William and Mildred are camping again this summer in the Upper Peninsula of Michigan. Each year they drive from their home near Pittsburgh, Pennsylvania, to their favorite Michigan resort. They have been spending their summers here for twenty-three years. They always rent the same cabin. It is sunny in the morning and shady in the afternoon. While William goes fishing in one of the nearby lakes or streams, Mildred reads magazines or novels, or works on her knitting. Sometimes they get up before dawn and go bird-watching together. Afterwards, they go back to their cabin for a hot breakfast. All the park rangers know them by name. They enjoy getting to know the families that visit the park for the first time. They also enjoy reacquainted with the families that come to the park regularly. This summer there is another older couple from Indiana visiting the park, too. William and Mildred have invited them over to dinner tonight. William caught seven pan-sized trout this morning, and has already cleaned and cooled them. Together with the four he put on ice yesterday, there should be enough fish for everyone. He just finished peeling 16

small potatoes and slicing one very strong onion. Mildred will prepare her special home fries. William and Mildred treasure the opportunity to have feasts like this with new or old friends. It is one thing that brings them back to this resort every year.

Level		Propositions
2	_____	1. (EXCITED, HARRY)
3	_____	2. (CAUSALITY, ABOUT, P3)
1	_____	3. (VISIT, HARRY, GRAND CANYON)
3	_____	4. (NUMBER OF, VISIT, FIRST)
2	_____	5. (POSSESS, HARRY, SON)
3	_____	6. (REFERENCE, SON, GERALD)
3	_____	7. (CONJUNCTION: AND, P5, P8)
2	_____	8. (POSSESS, HARRY, DAUGHTER-IN-LAW)
3	_____	9. (REFERENCE, DAUGHTER-IN-LAW, SALLY)
2	_____	10. (INVITE, P7, HARRY)
2	_____	11. (COME ALONG, HARRY, VACATION)
3	_____	12. (POSSESS, P7, VACATION)
2	_____	13. (POSSESS, HARRY, GRANDSON)
3	_____	14. (REFERENCE, GRANDSON, JASON)
3	_____	15. (QUALIFY, FIVE-YEAR-OLD, GRANDSON)
4	_____	16. (QUALIFY, ENERGETIC, FIVE-YEAR-OLD GRANDSON)

2	_____	17. (THERE, JASON)
3	_____	18. (CONJUNCTION: ALSO, P12, P17)
3	_____	19. (TIME: ON, P20, DAY)
4	_____	20. (POSSESS, THEY, DAY)
5	_____	21. (QUALIFY, FIRST DAY)
2	_____	22. (RIDE, GERALD, MULE)
3	_____	23. (CONJUNCTION: AND, P22, P24)
2	_____	24. (RIDE, JASON, MULE)
3	_____	25. (QUALIFY, RIDE, DOWN)
3	_____	26. (LOCATION: TO, P25, RIVER)
4	_____	27. (LOCATION: AT, P26, BOTTOM)
2	_____	28. (SPEND, HARRY, DAY)
3	_____	29. (QUALIFY, PART OF, DAY)
2	_____	30. (TALK, HARRY, GROUP)
3	_____	31. (QUALIFY, TOUR, GROUP)
4	_____	32. (QUALITY OF, GROUP, SENIOR CITIZENS)
5	_____	33. (LOCATION: FROM, SENIOR CITIZENS, PHOENIX)
3	_____	34. (TIME: THEN, P35)
2	_____	35. (GO, HE, ON HIKE)
3	_____	36. (MANNER: WITH THEM, P35)
4	_____	37. (NUMBER OF, P36, SEVERAL)

3	_____	38. (QUALIFY, SHORT HIKE)
3	_____	39. (TIME: NEXT DAY)
2	_____	40. (HAVE, HARRY, PICNIC)
3	_____	41. (CONJUNCTION: AND, P40, P43)
3	_____	42. (POSSESS, HARRY, FAMILY)
2	_____	43. (HAVE, FAMILY, PICNIC)
3	_____	44. (LOCATION: NEAR, P41, STATION)
4	_____	45. (QUALIFY, RANGER STATION)
2	_____	46. (QUALITY OF, WEATHER, BEAUTIFUL)
3	_____	47. (TIME: P46, EACH DAY)
3	_____	48. (QUALITY OF, TEMPERATURES, WARM)
4	_____	49. (CONJUNCTION: AND, P48, P50)
3	_____	50. (QUALITY OF, AIR, DRY)
4	_____	51. (QUALIFY, VERY DRY)
2	_____	52. (GLAD, EVERYONE)
3	_____	53. (CAUSATION: THAT, P52, P54)
3	_____	54. (WAIT, EVERYONE)
4	_____	55. (TIME: UNTIL SEPTEMBER, P54)
4	_____	56. (PURPOSE: TO, P55, P57)
4	_____	57. (TAKE, EVERYONE, VACATION)
5	_____	58. (POSSESS, EVERYONE, VACATION)
3	_____	59. (QUALITY OF, SUMMER, HOT)

4	_____	60. (QUALIFY, TOO HOT)
4	_____	61. (LOCATION: IN, P59, ARIZONA)
3	_____	62. (CONJUNCTION: AND, P59, P63)
3	_____	63. (QUALITY OF, CROWDS, THICK)
4	_____	64. (QUALIFY, TOO THICK)
4	_____	65. (LOCATION: AT, P63, GRAND CANYON)
3	_____	66. (POSSESS, THEY, DRIVE)
3	_____	67. (LOCATION: FROM, P66, TOPEKA, KANSAS)
2	_____	68. (QUALITY OF, DRIVE, COOL)
3	_____	69. (CONJUNCTION: AND, P68, P70)
2	_____	70. (QUALITY OF, DRIVE, COMFORTABLE)
3	_____	71. (TIME: NIGHT, P73)
4	_____	72. (NUMBER OF, NIGHT, FIRST)
2	_____	73. (STAY, THEY)
3	_____	74. (LOCATION: IN, P73, GARDEN CITY, KANSAS)
4	_____	75. (REFERENCE, GARDEN CITY, KANSAS, P78)
4	_____	76. (POSSESS, HARRY, BROTHER)
4	_____	77. (QUALIFY, YOUNGER BROTHER)
3	_____	78. (LIVE, BROTHER)
3	_____	79. (TIME: NIGHT, P81)

4	_____	80. (QUALIFY, NEXT, NIGHT)
2	_____	81. (STAY, THEY)
3	_____	82. (LOCATION: AT, P81, MOTEL)
4	_____	83. (LOCATION: IN, P83, GALLUP, NEW MEXICO)
3	_____	84. (TIME: ON DAY, P86)
4	_____	85. (NUMBER OF, DAY, THIRD)
2	_____	86. (DRIVE, THEY)
3	_____	87. (LOCATION: THROUGH, P86, PETRIFIED FOREST NATIONAL PARK)
4	_____	88. (QUALITY OF, PETRIFIED FOREST NATIONAL PARK, BEAUTIFUL)
3	_____	89. (ENCHANTED, JASON, BY INDIANS)
4	_____	90. (QUALIFY, NAVAJO INDIANS)
5	_____	91. (QUALIFY, REAL NAVAJO INDIANS)
2	_____	92. (ARRIVE, THEY)
3	_____	93. (LOCATION: AT, P92, GRAND CANYON)
4	_____	94. (QUALIFY, SOUTH RIM, GRAND CANYON)
3	_____	95. (TIME: IN AFTERNOON, P92)
4	_____	96. (QUALIFY, LATE AFTERNOON)
2	_____	97. (WAIT, HARRY)
2	_____	98. (NEGATE, P97)

3	_____	99. (PURPOSE: TO, P98, P100)
3	_____	100. (SEE, HARRY, MARVEL)
4	_____	101. (QUALIFY, THIS MARVEL)
5	_____	102. (QUALIFY, THIS MARVEL, OF NATURE)
4	_____	103. (LOOK, P100, LIKE)
5	_____	104. (MANNER: UP CLOSE, P103)
2	_____	105. (DISAPPOINTED, HARRY)
2	_____	106. (NEGATE, P105)
3	_____	107. (DAZZLED, HARRY, BY CANYON)
4	_____	108. (QUALIFY, DEPTH OF, CANYON)
5	_____	109. (CONJUNCTION: AND, P108, P110)
4	_____	110. (QUALIFY, BREADTH OF, CANYON)

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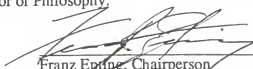
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BIOGRAPHICAL SKETCH

John Paul Bramblett Jr. was born in Bourg, Louisiana, and was raised in Manchester, Tennessee. He attended college at East Tennessee State University and Wake Forest University. Paul began graduate studies at the University of Florida IN counseling psychology in 1987. He received his M.S. degree in 1989 and his Ph.D. in 1994. His two areas of interest while in graduate school were psycho-gerontology and crisis/trauma intervention.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Franz Epting, Chairperson
Professor of Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.
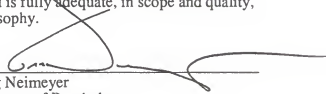
Robin L. West, Cochairperson
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Harry Grater
Professor of Psychology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Greg Neimeyer
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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This dissertation was submitted to the Graduate Faculty of the Department of Psychology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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